

Voicing Phenomenon of Reduplication in Shona

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Abstract

Reduplication is an operation of word-formation where a new meaning is expressed by repeating all or part of the linguistic elements. This paper focuses on reduplication in Shona, a language spoken in South Africa. Some Shona reduplicated words change its word-initial consonant whereas other languages change its elements between the sounds, not the initial. Based on data described in books and from a native speaker, reduplication rules are examined. Regarding reduplication, two aspects interact; the phonological template and the voicing. The phonological template of reduplication and the number of the syllables are involved with the voicing process.

1 Introduction

This paper focuses on the interaction of two things regarding reduplication; the morphological template of reduplication and the voicing phenomena. How consonants receive voicing is the result of the reduplication process. From here on, reduplication in Shona will be represented along with an analysis.

Reduplication is a word-formation operation here the meaning is expressed by repeating all or part of linguistic elements (Urbanczyk, 2011). Shona, a language spoken in South Africa, also has reduplication. The results usually mean that the action is done all over the place or all over a period. In some cases, it means that much action is done with no purpose (Fortune, 1957).

(1) Verb Reduplication in Shona

	verb	Meaning	reduplicated word	Meaning
a.	<i>-famba</i>	‘walk’	<i>famba-famba</i>	‘walk all over, be restless’
b.	<i>-bika</i>	‘cook’	<i>bika-bika</i>	‘cook a lot; cook here and there unsuccessfully’
c.	<i>-rara</i>	‘sleep’	<i>rara-rara</i>	‘sleep fitfully’
d.	<i>-pfuna</i>	‘rain slightly’	<i>bvuna-pfuna</i>	‘light rain’

Examples in (1a-c) show that some verbs reduplicate the whole verb without any changes. On the other hand, the example in (1d) shows that the initial consonant becomes voiced: from [pf] to [bv].

Other languages have a similar phenomenon as in (1d); sounds are changed by conjoining with another sound. For example, Japanese has sequential voicing known as *rendaku*, which is a phenomenon where an intervocalic consonant becomes voiced when the word is reduplicated (Hirose 2017).

(2) Sequential Voicing of Reduplication in Japanese (Hirose 2017)

	Adverb	meaning	reduplicated word	meaning
a.	<i>Fukai</i>	‘very deeply’	<i>fuka-bukato</i>	‘deep’
b.	<i>Karui</i>	‘light’	<i>karu-garuto</i>	‘easily’

Examples in (2a-b) show that the whole stem is reduplicated in Japanese. In the reduplicated form, voiceless

sounds of the stem become voiced when it lies between vowels. However, this type of sequential voicing has exceptions. If a stem already contains a voiced obstruent, the sequential voicing does not occur (Ito and Mester, 1986; Nishimura, 2007).

(3) Japanese Reduplication without Sequential Voicing (Nishimura, 2007)

	Noun	meaning	reduplicated word	meaning
a.	<i>tsugi</i>	‘next’	<i>tsugi-tsugi</i>	‘in succession’
b.	<i>Kazu</i>	‘number’	<i>kazu-kazu</i>	‘various, many’

Examples in (3a-b) show cases where the stems already have voiced obstruent consonants such as [g] or [z]. Under these cases, sequential voicing does not appear.

Tagalog is another language where a similar change in sounds occur (Carrier, 1979). The Subject Topic prefix *maŋ-* is involved with regressive nasal assimilation.

(4) Regressive Nasal Assimilation in Tagalog (Carrier, 1979:59)

- a. /maŋ-putul/mamutol ‘cut-ST’
- b. /maŋ-bilih/ mamilih ‘shop-ST’

The initial consonant of the stem is assimilated to another consonant in examples in (4). Bilabial consonants fuse with a preceding nasal even though the word-initial consonant of the stem in (4b) is not a voiceless sound. These examples in Japanese and Tagalog are examples of an assimilation phenomenon, which happen when different elements are combined (Ito and Mester, 1986; Carrier, 1979). Here, we can say that sound changes are a cross-linguistic phenomena regarding the combination of some different elements.

Considering the examples above, cross-linguistically, voicing usually occurs after voiced sounds because the voice feature of a preceding sound affects following sounds. Whereas reduplication can be observed in other languages such as Japanese, Shona is a different kind of language from the others because of the voicing phenomenon in the word-initial position. It is unusual for a word-initial consonant to alter because there are no preceding sounds. However, in Shona, some words change consonants in that position. Therefore, other rules than assimilation works for a word-initial consonant in Shona regarding the voicing.

In the rest of this paper, reduplicated Shona words are analyzed based on data elicited from a native speaker and other sources. Then, a phonological analysis is presented.

2 Previous Studies

Reduplication contains two aspects: phonological duplication and morphological doubling (Inkelas, 2008; Urbanczyk, n.d.). Although reduplication includes both morphological and phonological aspects, the boundary of both is weakened. Because Optimality Theory emerges, we do not have to think about phonological and morphological aspects separately. This theory does not have a division between the morphology and phonology due to its GEN function. GEN function cannot alter the morphological affiliation of phonological material. The constraints, which are made by the GEN function, require morphological information to be held in the output representations that are evaluated in the tableau; this type of constraint can require a morphological and phonological category at same time (Raimy, 2000). Optimality Theory implies that morphological aspects and phonological aspects are not completely different aspects.

In reduplication phenomena, all or part of the word is repeated, and it is affected by both phonological and morphological constraints. The morphological perspective contains some semantical elements, and affixes, which are one of the morphemes, can add to the reduplicated form. An affix adds another meaning to the base, and it modifies not only the phonological surface form but also meaning. Some cases demonstrate the reduplicated form, which is shaped by the phonological template, is independent of usage.

- (5) Nakanai CVCV reduplications (Spaelti 1997:76 cited from Eric, 2000:63)
 raga-raga ‘jumping’/Cont. Habitative Verbs
 muluga-luga ‘to be first...’/Concrete Nouns
 bolo-bolo ‘many pigs’/Collective Plural Nouns
 ilima-lima ‘five’/Distributive Numerals

Reduplicated words in (5) do not agree in the usage, such as part of speech. However, the shape of reduplicated form is shared by all examples. Reduplication is not necessarily the representation of a particular morpheme (Eric, 2000). Total reduplicated words in Shona have common phonological form, but sometimes the part of speech varies.

3 Data and Phonological Analysis

3.1 Data from Books Some Shona reduplications involve sound changes, and some do not (Fortune, 1955, 1957). The following examples show reduplication where there are no sound changes:

- (6) Verb Reduplication in Shona without Sound Changes

	stem (stem)	Meaning	reduplicated word	meaning	part of speech of reduplicated form
a.	<i>-famba</i>	‘walk’	<i>famba-famba</i>	‘walk all over, be restless’	Verb
b.	<i>-rara</i>	‘sleep’	<i>rara-rara</i>	‘sleep fitfully’	Verb
c.	<i>-bika</i>	‘cook’	<i>bika-bika</i>	‘cook a lot; cook here and there unsuccessfully’	Verb

The data in (6a-c) are examples of total reduplication in Shona, which does not include any sound changes. The whole part of the verb is repeated, and it makes reduplicated words form.

Now we have another set of data which contains sound changes:

- (7) Verb Reduplication in Shona with Sound Changes

	stem (verb)	Meaning	reduplicated word	meaning	part of speech of reduplicated form	prefix
a.	<i>-pfuna</i>	‘rain slightly’	<i>byuna-pfuna</i>	‘light rain’	Noun	N/A
b.	<i>-enda</i>	‘go’	<i>gwenda-kwenda</i>	‘coming and going’	Noun	<i>ku-</i>
c.	<i>-pota</i>	‘go around’	<i>mfiote-mupote</i>	‘of going around’	Noun	<i>mu-</i>
d.	<i>-tanga</i>	‘start’	<i>nhange-mutange</i>	‘of starting’	Noun	<i>mu-</i>
e.	<i>-tura</i>	‘put up’	<i>nhuri-muturi</i>	‘of putting up’	Noun	<i>mu-</i>

When we look at examples in (7a-b), the word-initial obstruents become voiced; [pf] changes [bv] and [k] becomes [g]. Examples in (7c-e) show another voicing. The word-initial consonant of the stem is affected by preceding prefix, *mu-*: [p] and [t] of stems and [u] of the prefix disappear and [h] appears. Based on examples above, there is no relationship between these sound changes and part of speech in the reduplicated word.

3.1.1 Morphological Analysis A verbal root is assumed as before *-a* because all verbs end in *-a*. Therefore, the bound morpheme *-a* indicates that word is the verb. Another bound morpheme, prefix, is also added: as examples in (7c-e) show. In the cases of (7c-e), reduplication is applied after prefixation. Otherwise,

the prefix should appear at only the initial position in reduplicated form.³

3.1.2 Phonological Analysis According to Rule-based theory, (7a-b) can be analysed like this:

(8) Change in Sound in (7a)
[-voice] → [+voice] / #_

(9) Changes in Sound in (7b)
[-voice] → [+voice] / #_
V → [-consonantal, -sonorant] / _V

These rules show that consonants get voiced when they are in the initial position. Also, when a vowel follows another sound, it becomes a glide.

Followings are analysis on (7c-e) according to Rule-based theory.

(10) Changes in Sound in (7c)
[+voice, +continuant] → Φ / _V
[-voice, -continuant] → [+voice, +continuant] / N_

(11) Changes in Sound in (7d-e)
[-anterior] → [+anterior] / #_
[+voice, +continuant] → Φ / _V
[-voice, -continuant] → [+voice, +continuant] / N_

These rules show that the vowel is deleted when reduplication occurs. The plosive sounds change to fricative sounds. Also, the nasal sound changes its place of articulation according to the manner of the following consonant; Nasal assimilation happens.

3.1.3 Hypothesis If the patterns in previous sections are generalizable, other verbs should also reduplicate in the same way. Therefore, the hypothesis in (12) is as follows.

(12) Phonological Hypothesis

When voiceless sounds are in the initial position in reduplicated form, it becomes voiced. When nasal consonants are in the initial position in reduplicated form, it changes its place of articulation according to the following consonant.

3.2 Data from Elicitation To confirm whether hypothesis (12) is true, a wider selection of data was elicited from a native speaker of Shona. The target words are the words start with voiceless obstruents [p, f, t, s, tʃ, k, pf], and the same words as (6) and (7). The native speaker was also asked to indicate if the possible surface form is ungrammatical. Underlined parts indicate parts where the change appears. Under the case where the reduplicated word allows multiple forms, the speaker recognises that there are no differences of meaning between the forms.

³ The prefix -mu is one of the class markers and it means humans and human agents. The prefix -ku is one of the class marker and it makes verb infinitives (Dale, 1975). As instances of (7) shows, the reduplication occurs after suffixation because the whole stem, which includes prefix, is repeated.

(13) Reduplication in Shona: No Sound Change

	Stem (verb)	meaning	reduplicated word	meaning	part of speech of reduplicated form	prefix
a.	<i>-pombi</i>	‘tap’	<i>pombi-pombi</i> * <i>bombi-pombi</i>	‘tap around’	Verb	N/A
b.	<i>-pona</i>	‘survive’	<i>pona-pona</i> * <i>bona-pona</i>	‘continue to survive’	Verb	N/A
c.	<i>-pona</i>	‘survive’	<i>muponi-poni</i> * <i>m̂honi-poni</i>	‘of continue to survive’	Noun	<i>mu-</i>
d.	<i>-famba</i>	‘walk’	<i>famba-famba</i> * <i>vamba-famba</i>	‘walk all over, be restless’	Verb	N/A
e.	<i>-for a</i>	‘walk toward something’	<i>fora-fora</i> * <i>vora-fora</i>	‘continue to walk toward something’	Verb	N/A
f.	<i>-tuka</i>	‘scold’	<i>tuka-tuka</i> * <i>duka-tuka</i>	‘scold repeatedly’	Verb	N/A
g.	<i>-tungiza</i>	‘burn’	<i>tungiza-tungiza</i> * <i>dungiza-tungiza</i>	‘burn all over the place’	Verb	N/A
h.	<i>-sona</i>	‘sew’	<i>sona-sona</i> * <i>zona-sona</i>	‘sew around’	Verb	N/A
i.	<i>-fon̄ga</i>	‘put elements’	on <i>fon̄ga-fon̄ga</i> * <i>d̄zon̄ga-fon̄ga</i>	‘put around on elements’	Verb	N/A
j.	<i>-t̄fon̄ja</i>	‘convey message winking’	a by <i>t̄fon̄ja-t̄fon̄ja</i> * <i>d̄fon̄ja-t̄fon̄ja</i>	‘wink repeatedly to convey a message’	Verb	N/A
k.	<i>-kodza</i>	‘fatten’	<i>kodza-kodza</i> * <i>godza-kodza</i>	‘fatten more and more’	Verb	N/A

The examples in (13) show words that do not have any sound changes when they are reduplicated. The initial consonant in these words is not allowed to become voiced. (13c) indicates that prefix can add to reduplicated form, and it changes part of speech.

(14) Reduplication in Shona: Initial Voicing

stem(verb)	meaning	reduplicated word	meaning	part of speech of reduplicated form	prefix
a. - <i>pfuna</i>	'rain slightly'	<i>byuna-pfuna</i>	'light rain'	Noun	N/A
		<i>pfuna-pfuna</i>			
		* <i>bvuna-bvuna</i>			
b. - <i>pfuka</i>	'haunt'	<i>pfuka-pfuka</i>	'visit very often'	Verb	N/A
		<i>byuka-pfuka</i>			
		* <i>bvuka-bvuka</i>			
c. - <i>enda</i>	'go'	<i>gwenda-kwenda</i>	'coming and going'	Noun	<i>ku-</i>
		<i>kwenda-kwenda</i>			
		* <i>gwenda-gwenda</i>			

(14) is a set of examples of Shona reduplication with voicing in the initial consonant. However, the voicing is not mandatory. Elicitation reveals that voicing is optional.

(15) Verb Reduplication in Shona: Nasal Assimilation

stem(verb)	meaning	reduplicated word	meaning	part of speech of reduplicated form	prefix
a. - <i>pota</i>	'go around'	<i>mhiote-mupote</i>	'of going around'	Noun	<i>mu-</i>
		* <i>mhiote-mhiote</i>			
		* <i>mupote-mhiote</i>			
b. - <i>tura</i>	'put up'	<i>nhuri-muturi</i>	'of putting up'	Noun	<i>mu-</i>
		* <i>nhuri-nhuri</i>			
		* <i>muturi-nhuri</i>			

The examples in (15) show a different kind of sound change from (14). These words are not simply voiced but assimilate the last vowel of the prefix and the initial consonant. In this case, the voicing is not optional. When the nasal assimilation occurs, the initial consonant of the words has to become voiced unlike the examples in (14).

There are two types of changes in consonants. As shown in examples in (14a-c), the initial consonants are voiced; [pf] becomes [bv] and [k] becomes [g]. Also, examples in (15a-b) show that the initial consonant of the stem is affected by preceding prefix, *mu-*: [p] and [t] of the stems and [u] of the prefix disappear and [h] appears. According to charts above, it is obvious that there is no relationship between these sound changes and part of speech in the reduplicated word.

Examples in (14a-c) show that initial voiceless sounds become voiced regardless of whether the prefix exists or not. Even if the reduplication is applied to the prefixed stem, the initial consonant becomes voiced.

Hypothesis (12) is not true because the word-initial voiceless sounds of the reduplicated form are not voiced except for (14a-c). (14a-c) show that it is not necessary for initial voiceless consonants to become voiced. Keeping voiceless at the word-initial position is also grammatical. On the other hand, when nasal consonant lies at the initial position, it always changes the sound. Unlike other consonants, nasals must change the initial consonant.

4 Analysis

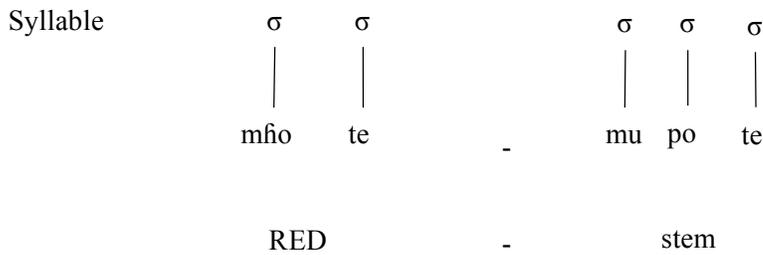
This section discusses what happens to the word-initial consonants, which receive voicing in reduplicated form. The discussion on the voicing process will be based on the phonological analysis.

We now know that the prefixing precedes the reduplication process, from here the voicing phenomenon will be considered.

4.1 Discussion based on Autosegmental Phonology Supposing the prosodic hierarchy, we can hypothesize how the voicing phenomenon occurs based on autosegmental phonology.

We can assume the syllable structure for (15a) *mhote-mupote* as an example in (16).

(16)

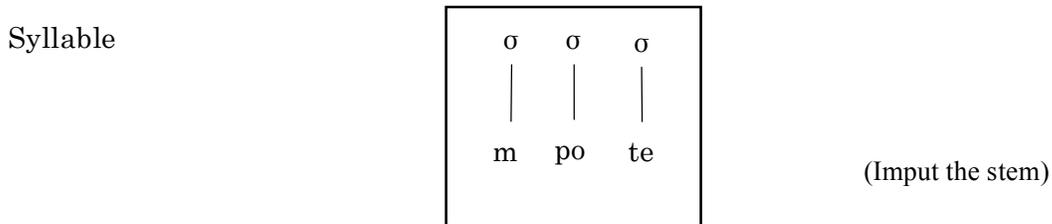


Here, let us assume that a reduplicative template of the reduplicant is underspecified, which is two syllables. When reduplicated form appears in the surface form, it has to be two syllables. Not to violate this restriction, the initial consonants of the reduplicated word have to be changed in some cases.

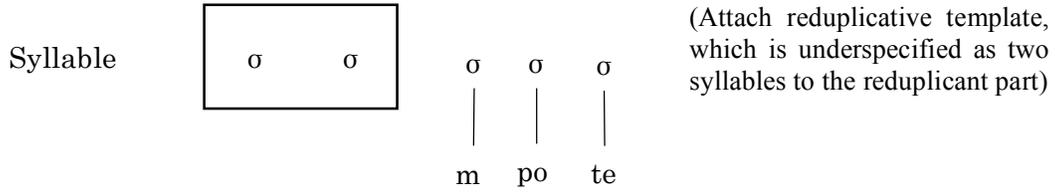
4.2 Initial Voicing: Optional vs Compulsory Some initial consonants get voiced in a reduplicated word, such as (14a-c) and (15a-b). We have already discussed which form can be reduplicated. However, some stem such as (15a) is not allowed to be totally reduplicated: **mupote-mupote*. Based on autosegmental theory, following analysis is assumed.

(17)

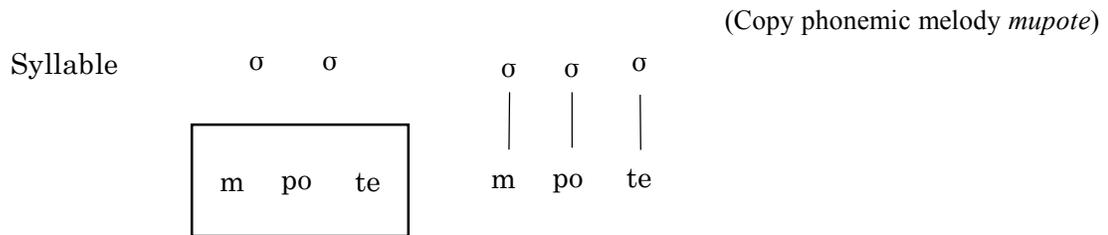
a.



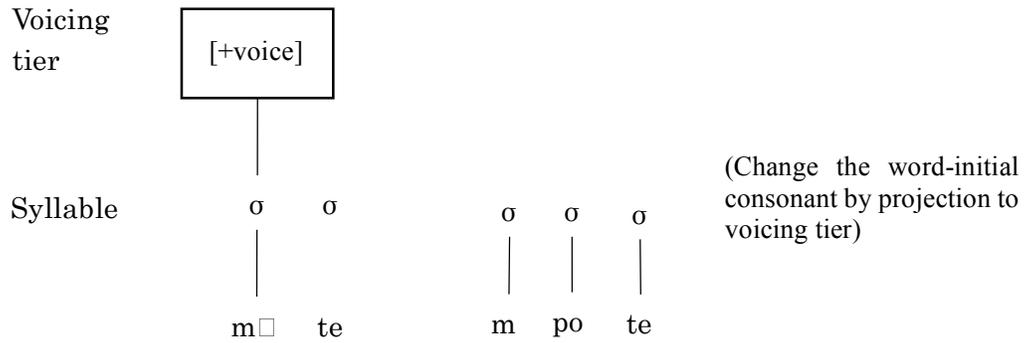
b.



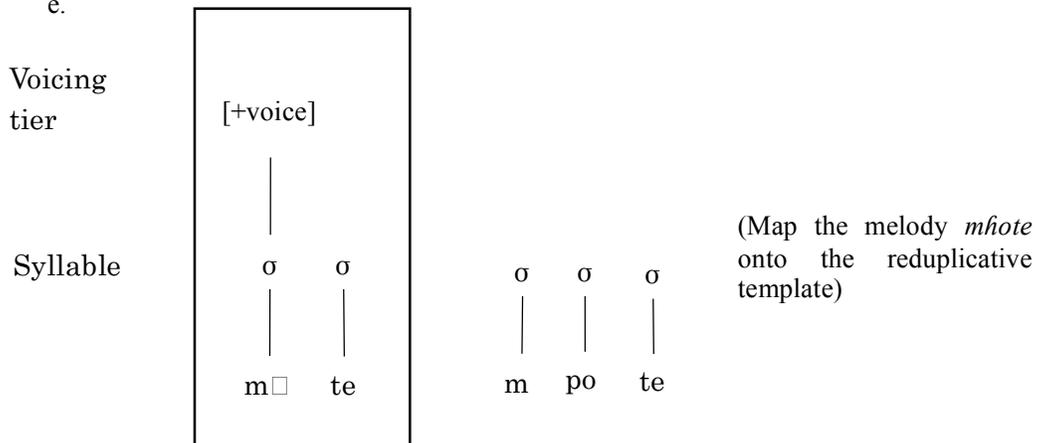
c.



d.



e.

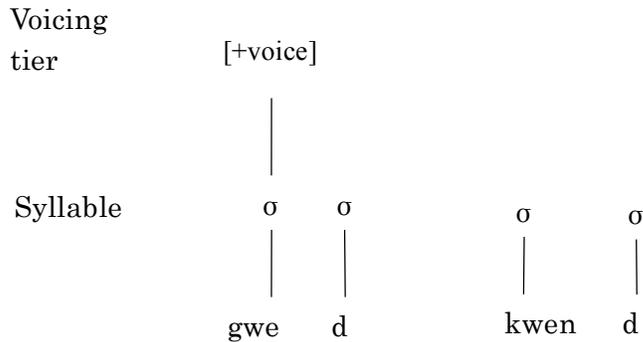


mupote-mupote is not allowed because the reduplicant has three syllables. Thus, this word deletes one vowel by using voicing tier to change its number of the syllables.

On the contrary, as long as the number of the syllables corresponds to the template, both patterns of the voiced initial consonants and voiceless initial consonants are allowed like in (14c).

(18)

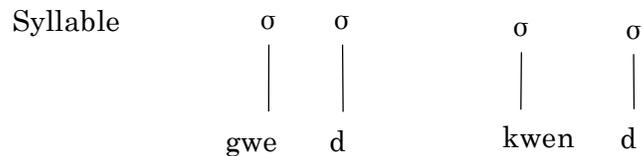
a



or

b

Voicing
tier



The examples (18a-b) shows that the voicing tier is optional; both forms of (18a) and (18b) are allowed. In this case, vocalization does not matter because voicing occurs as means to fit the syllable template.

4.3 Initial Voicing: Nasal Assimilation As the previous studies show, it is common that the place of articulation assimilates the following consonant. The same assimilation applies to Shona nasal assimilation. It shows complementary distribution.

(19) morphophonemic rule in prefix *mu-* in Shona

{mu} → [m] / _[labial]
 [n] / _[alveolar]

From the discussion so far, the two generalizations emerge. One is that the reduplicant must be two syllables. Another is that the word-initial consonants in reduplicated form are allowed to be voiced. Therefore, the reduplicated form of *kwenda* is allowed to be both *gwenda-kwenda* and *kwenda-gwenda*. However, *mupote-mupote* is not allowed because the reduplicant has three syllables. In this case, because the first consonant is allowed to be voiced, the vowel and the consonant are assimilated, then the reduplicant becomes

two syllables.

(13c) is an example of three syllables in the reduplicant. However, it is obvious that prefixation occur after reduplication. In this case, the reduplicable form of (14c) should be *poni*.

5 Discussion

So far, this paper analyzed why the initial consonants of the reduplicated words are voiced by assuming the syllable template for reduplicant in some cases.

This paper cannot refer to the phenomenon in other languages where the initial consonants become voiced because the voicing phenomenon are usually caused by assimilation of preceding elements. However, let us consider that the reduplication process has two options for voicing; the initial voicing is optional for the initial consonants other than nasal such as (14), and mandatory for nasal-initial consonants such as (16). We then can consider that voicing is one of the results of the assimilation, whose aim is adjusting the number of syllables.

(20) The process of prefixation and reduplication

a. pote → mu-pote → mupote → mfiote-mupote
 stem → prefix-stem → stem → RED – stem

b. enda → ku-enda → kwenda → kwenda-gwenda, gwenda-kwenda
 stem → prefix-stem → stem(*VV) → RED(*VV) – stem(*VV)

For example, words of nasal-initial consonant like (20a), the voicing is mandatory because it is the only way to avoid having over two syllables in the reduplicant. However, because the prefixed stem does not have VV adjacency, voicing is unnecessary as of the phase where just after prefixation. On the other hand, words of a non nasal-initial consonant like (20b), the word has to be assimilated just after the prefixation because the prefixed stem has VV adjacency. Now, we can infer a reason that voicing is optional. It is because we have mandatory voicing phenomena such as (20a), and the other words are affected by it. Originally the words do not need voicing for non nasal-consonant words such as (20b). However, because of the existence of words like (23a), where voicing is mandatory, the lexicon is affected, and the voicing becomes optional for some words.

6 Conclusion

This paper investigated the rules for voicing in reduplication form in Shona. Multiple grammatical forms are elicited from the native speaker. It provides a hypothesis that the voicing process is supposedly optional because only a few sounds become voiced at the word-initial position. Therefore, it is necessary to investigate other compounds than reduplication to examine whether the voicing is unique to reduplication or not. Also, other languages need to be investigated to find out whether the word-initial voicing is unique to Shona.

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